UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,554	03/08/2002	Yasutaka Ishii	3273-0153P	1456

2292 7590 08/27/2003

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER
SMALL, ANDREA D SOUZA

ART UNIT	PAPER NUMBER
1626	

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/092,554	ISHII ET AL.	
	Examiner	Art Unit	
	Andrea D Small	1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) *1-2, part of 4 and 5-9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3 and 4* is/are rejected.

7)☒ Claim(s) *1-2, part of 4 and 5-9* is/are objected to.

8)☒ Claim(s) *1-9* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *9/02* .
4) ☒ Interview Summary (PTO-413) Paper No(s). *8/21* .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

I. Preliminary Matters:

(a) Applicants response to restriction requirement filed 6/16/2003 has been received and entered into the file.

(b) Applicants claim for priority under 35 USC 119(a)-(d) to Japanese 067633/2001 03/09/2001 is acknowledged. However, priority has not been perfected, as an English translation of the foreign priority document has not been provided.

(c) The information disclosure statement filed 9/30/2002 by Applicant has been received and a copy of an initialed and signed 1449 is attached to the instant office action.

(d) Claims 1-9 are pending.

II. Restriction/Election:

Applicant's election with traverse of group I in Paper dated 06/162003 is acknowledged. The traversal is on the ground(s) that:

(a) Group IV should include claims 5-9. The examiner inadvertently left out claim 9 from Group IV in the restriction requirement issued on May 16, 2003. Therefore, the examiner agrees with the applicant that group IV should include claims 5-9.

(b) That claim 3 (group III), is subgeneric to claim 2 (group II), which in turn is subgeneric to claim 1 (group I), therefore should claims 1-4 should be grouped together as a search for the imide skeleton in group I, claim 1, thus relate to one compound invention. The examiner agrees with Applicant.

Thus, the restriction requirement of office action May 16, 2003 is withdrawn and a new restriction requirement is outlined below.

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

2. The main categories of invention are as follows:

I. Claims 1-4, drawn to products of compound in claim 1, classified in 548/530+; 548/473, 548/476, etc
II. Claims 5-9, drawn to process of preparing organic compounds, variously classified depending on the product made.

3. Inventions of group I and group II are related as process and intermediate for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different intermediate or by hand, or (2) the intermediate as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case catalyst can be employed in a materially different process such as electrocatalytic oxidation of alcohols, disclosed in Gorgy, et al.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, the searches are not coextensive, the search for the process of group II would require searching the product made which is a completely divergent search from searching the catalyst of group I, so much so that a reference that would anticipate one of the groups would not even render the other obvious. Searching both groups in one application would impose a serious burden on the office; therefore restriction for examination purposes as indicated is proper.

4. The above grouped inventions themselves are inclusive of patentably distinct subject matter, which must be further restricted because patentably distinct species may be included together in a generic claim where the number of species is *reasonable* and where there is *no* serious burden on the examiner to examine all the grouped distinct species in one application.

Accordingly, along with the election of one of the above groups, the following action is also taken.

5. It is to be noted that the following action is a restriction requirement placed on the instant claims; they are NOT being rejected as being an improper Markush claim. The entire contents of the claims will eventually be examined, either as elected subject matter in the instant application or as elected subject matter in divisional applications.

Claim 1 and claim 5 are generic to a plurality of disclosed patentably distinct species comprising, for example, the compounds of (1) catalysts of claim 2 that have a certain solubility parameter versus catalyst of claim 3 that do not (3) a method of preparing the organic compounds such as ethanol, hydroxybutarolactone, etc. Each species differs one from the other in structure and element and have each acquired separate status in the art. For example, the bicyclic imide compound may be classified in class 548, subclass 473, the carboxylic acid ester on the bicyclic imide compound may be classified in class 547, subclass 476, the imide skeleton may be classified in class 548, subclass 530, etc. Examining this plurality of distinct species in the same application would result in a serious burden during examination.

The search required, both electronic and manual database, for each of the patentably distinct species is separate and involves separate search considerations and search strategies. These searches are not co-extensive and the evaluation of the search results are divergent, so much so that searching for a reference that would anticipate a reasonably grouped invention identified supra would not even render the non-elected invention obvious. Therefore, a serious burden would be placed on the office if restriction between these groupings were not required.

6. A precise listing of all the possible sub-groups of inventions that would fall under any of the above main invention groups cannot be made due to the sheer volume of species encompassed by the instant claims. Consequently, Applicant is required under 35 U.S.C. 121 to elect a single disclosed species or single preferred embodiment of their invention, even though this requirement is traversed. Additionally, whatever specific compound is ultimately elected, applicants are required to list all claims readable thereon.

7. Upon the election of a single disclosed species (e.g. Example, page number and structural depiction) or a preferred embodiment of the invention, a generic concept, inclusive of the elected species, will be identified by the Examiner for examination. This generic concept will establish the elected group to be examined and the remaining subject matter not within the confines of the generic concept will be withdrawn as non-elected subject matter. This subject matter may then be pursued in divisional applications as is Applicants right under 37 CFR 1.142(b).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement is traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the

currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i)

In a telephone conversation with Applicants representative Mr. Gallagher on July 25, 2003, a provisional election of species was made with traverse of 4-dodecyloxycarbonyl-N-hydroxyphthalimide, see page 15.

8. The generic concept:

Catalyst of compound of formula II wherein

Rx is as defined in claim3; and

N is as defined in claim 3.

The claims that are readable on the elected group are claims 3 and 4 in part. The remaining claims 1-2 and 4 in part and 5-9 are withdrawn from consideration as being drawn to non-elected inventions. 37 CFR 1.142(b).

III. Rejections:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 3 and 4 are rejected under 35 U.S.C. 102(a) as being anticipated by Sawatari, et al. See attached 892, cited by Examiner.

Applicants claims relate to catalysts comprising a cyclic imide compound of formula II as seen in claim 3 optionally further comprising a metallic compound (claim 4).

Sawatari, et al teaches catalysts that anticipate the instant claims where Rx is a hydrocarbon of 5 or more carbon atoms and n is an integer of 1 and optionally wherein these catalysts further comprise metallic compounds such as Cobalt or Manganese or both. See Scheme 1, compounds 1(b)-1(d) and Table I, catalyst compositions 1-6.

RN 380451-30-9 CAPLUS

CN 1H-Isoindole-5-carboxylic acid, 2,3-dihydro-2-hydroxy-1,3-dioxo-, hexyl ester (9CI) (CA INDEX NAME)

RN 380451-32-1 CAPLUS

CN 1H-Isoindole-5-carboxylic acid, 2,3-dihydro-2-hydroxy-1,3-dioxo-, dodecyl ester (9CI) (CA INDEX NAME)

RN 380451-34-3 CAPLUS

CN 1H-Isoindole-5-carboxylic acid, 2,3-dihydro-2-hydroxy-1,3-dioxo-, tetradecyl ester (9CI) (CA INDEX NAME)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

A. Claims 3 and 4 rejected under 35 U.S.C. 103(a) as being obvious over Sawatari, et al (cited by Examiner) in view of Ishii, et al (either JP 08-38909 or US 6,232,258 B1).

The applied reference, Sawatari, et al, has a common inventor, Yasutaka, Ishii with the instant application and the '258 patent has 2 inventors in common with the instant application, Yasutaka, Ishii and Tatsuya, Nakano. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of

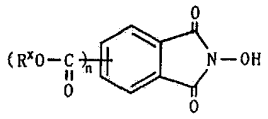
the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Applicants claims relate to catalysts comprising a cyclic imide compound of formula II as seen in claim 3 optionally further comprising a metallic compound (claim 4).

See re-presented claim 3 and 4 below:

Claim 3:

3. A catalyst comprising a cyclic imide compound represented by following Formula (II):



(II)

wherein R^x is a hydrocarbon group having five or more carbon atoms; and n denotes an integer of from 1 to 4, where the groups $-C(=O)-OR^x$ may be the same or different when n is equal to or more than 2.

Claim 4:

4. The catalyst according to any one of claims 1 to 3, further comprising a metallic compound.

Determination of the scope and content of the prior art (MPEP §2141.01)

(a) Sawatari, et al (see attached 892, cited by Examiner) teaches catalysts that anticipate the instant claims where Rx is a hydrocarbon of 5 or more carbon atoms and n is an integer of 1 and optionally wherein these catalysts further comprise metallic compounds such as Cobalt or Manganese or both. See Scheme 1, compounds 1(b)-1(d) and Table I, catalyst compositions 1-6.

RN 380451-30-9 CAPLUS

CN 1H-Isoindole-5-carboxylic acid, 2,3-dihydro-2-hydroxy-1,3-dioxo-, hexyl ester (9CI) (CA INDEX NAME)

RN 380451-32-1 CAPLUS

CN 1H-Isoindole-5-carboxylic acid, 2,3-dihydro-2-hydroxy-1,3-dioxo-, dodecyl ester (9CI) (CA INDEX NAME)

RN 380451-34-3 CAPLUS

CN 1H-Isoindole-5-carboxylic acid, 2,3-dihydro-2-hydroxy-1,3-dioxo-, tetradecyl ester (9CI) (CA INDEX NAME)

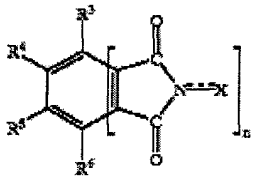
(b) Ishii, et al (US 6232,258 B1) discloses and claims catalysts that are structurally similar to those instantly claimed which may have optional metallic co-catalysts be used to oxidize substrates with molecular oxygen. Specifically the reference discloses catalysts containing a cyclic imide, (Ic) in claim 4, where the X is hydroxy, and the benzo of the cyclic imide is substituted by alkoxycarbonyl, also in claim 4, the enabling disclosure provides that the alkoxycarbonyl is of 1-10 carbons, such as methoxy carbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, pentyloxycarbonyl

and hexyloxycarbonyl. See col. 3, lines 31-47 of reference. The reference also claims the catalyst with an optional metal co-catalyst in claims 7-9.

See claims and disclosure re-presented below:

Claim 4:

(Ic)



wherein R^3, R^4, R^5 and R^6 are the same or different a hydrogen atom, an alkyl group, a hydroxyl group, an alkoxy group, a carboxyl group, an alkoxycarbonyl group, an acyl group, a nitro group, a cyano group, an amino group or a halogen atom; and R^1, R^2 and n have the same meanings as defined above.

Definition of alkoxycarbonyl:

The alkoxy group includes, for example, methoxy, ethoxy, propoxy, isopropoxy, butoxy, isobutoxy, t-butoxy, pentyloxy, hexyloxy, and other alkoxy groups each having about 1 to 10 carbon atoms. Among them, alkoxy groups having about 1 to 6 carbon atoms, in particular lower alkoxy groups having about 1 to 4 carbon atoms are preferable. Examples of the alkoxycarbonyl group include methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, pentyloxycarbonyl, hexyloxycarbonyl, and other alkoxycarbonyl groups each having about 1 to 10 carbon atoms in the alkoxy moiety.

Claims 7-9 re-presented:

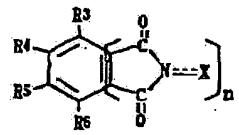
7. A catalyst composition according to claim 1, which comprises said imide compound shown by the formula (1), said strong acid and a co-catalyst.

8. A catalyst composition according to claim 7, wherein said co-catalyst is a compound containing at least one element selected from the group consisting of Group 2A elements of the Periodic Table of Elements, transition metal elements and Group 3B elements of the Periodic Table of Elements.

9. A catalyst composition according to claim 7, wherein said co-catalyst is a compound containing at least one element selected from the group consisting of Group 3A elements, Group 4A elements, Group 5A elements, Group 6A elements, Group 7A elements, Group 8 elements, Group 1B elements and Group 2B elements of the Periodic Table of Elements.

Ishii, et al (JP 08-38909, cited by Applicants) discloses catalysts that are structurally similar to those instantly claimed which may be used to oxidize substrates with molecular oxygen. Specifically the reference discloses catalysts containing a cyclic imide, where the X is hydroxy, page 20 of translation, and the benzo of the cyclic imide is substituted by alkoxycarbonyl such as methoxy carbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, pentyloxycarbonyl and hexyloxycarbonyl. See page 19 of translation. Compound I(c) and definition of alkoxy carbonyl on page 17. The reference also discloses the metallic co-oxidant, see page 5, claim 8 of translation and page 5, claim 10 of translation.

See pertinent parts of disclosure re-presented below:



(1c)

(Where R^3 to R^6 are the same or different and denote hydrogen atoms, alkyl groups, hydroxyl groups, alkoxy groups, carboxyl groups, alkoxycarbonyl groups, acyl groups, nitro groups, cyano groups, amine groups and halogen atoms. R^1, R^2 and n are the same as stated above.)

[Claim 8]

The oxidation catalyst of Claim 7 wherein the cooxidant is a transition metal compound or boron compound.

An alkoxylcarbonyl group with about 1 to 10 carbons in the alkoxy part, such as a methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, bentyloxycarbonyl and hexyloxycarbonyl group, is included as the alkoxycarbonyl group.

Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)

The difference between the prior art teachings and the instant claims is that the prior art specifically exemplifies catalysts with a cyclic imide having the alkoxycarbonyl of 6 carbons, but does not *specifically exemplify* catalysts optionally with a metallic co-catalyst, with a cyclic imide being substituted by an alkoxycarbonyl of more than 6 carbon atoms (C(O)ORx, where Rx is > 6 carbons).

Finding of prima facie obviousness---rationale and motivation (MPEP §2142-2413)

However, it would have been prima facie obvious for one of ordinary skill in the art at the time of the filing of the instant application to make additional catalysts having an optional metal co-catalyst structurally similar to those disclosed in Sawatari, et al wherein the cyclic imide is substituted by an alkoxycarbonyl of 6 or more carbon atoms, because Ishii, et al, specifically suggests that the alkoxycarbonyl groups have between 1-10 carbon atoms, which include moieties of 6 or more carbon atoms and that such a modification would be expected to result in additional catalysts that are useful in oxidizing substrates with molecular oxygen.

B. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being obvious over Gorgy, et al in view of Ishii, et al (US 6,232,258 B1, cited on 892 by Examiner) as applied to claim 3 AND over Ishii, et al (US 6,232,258 B1 cited on 892 by Examiner) as applied to claims 3 and 4.

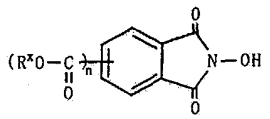
The applied reference has two common inventors, Yasutaka, Ishii and Tatsuya, Nakano, with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Applicants claims relate to catalysts comprising a cyclic imide compound of formula II as seen in claim 3 optionally further comprising a metallic compound (claim 4).

See re-presented claim 3 and 4 below:

Claim 3:

3. A catalyst comprising a cyclic imide compound represented by following Formula (II):



(II)

wherein R^x is a hydrocarbon group having five or more carbon atoms; and n denotes an integer of from 1 to 4, where the groups $-C(=O)-OR^x$ may be the same or different when n is equal to or more than 2.

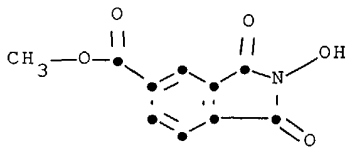
Claim 4:

4. The catalyst according to any one of claims 1 to 3, further comprising a metallic compound.

Determination of the scope and content of the prior art (MPEP §2141.01)

(a) Gorgy, et al (see attached 892, cited by Examiner) discloses a *specific* catalyst similar to those instantly claimed, where R4, which corresponds to Applicants Rx, is C(O)O-CH3, a.k.a., methoxycarbonyl and where n is 1. See compound 7, page 386. These catalysts are useful in oxidizing alcohols.

See specific catalyst re-presented below:



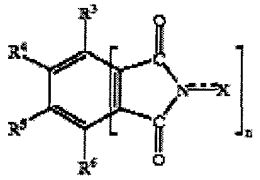
(b) Ishii, et al discloses and claims catalysts that are structurally similar to those instantly claimed which may have optional metallic co-catalysts be used to oxidize substrates with molecular oxygen. Specifically the reference discloses catalysts containing a cyclic imide, (Ic)

in claim 4, where the X is hydroxy, and the benzo of the cyclic imide is substituted by alkoxycarbonyl, also in claim 4, the enabling disclosure provides that the alkoxycarbonyl is of 1-10 carbons, such as methoxy carbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, pentyloxycarbonyl and hexyloxycarbonyl. See col. 3, lines 31-47 of reference. The reference also claims the catalyst with an optional metal co-catalyst in claims 7-9.

See claims and disclosure re-presented below:

Claim 4:

(1c)



wherein R^3, R^4, R^5 and R^6 are the same or different a hydrogen atom, an alkyl group, a hydroxyl group, an alkoxy group, a carboxyl group, an alkoxycarbonyl group, an acyl group, a nitro group, a cyano group, an amino group or a halogen atom; and R^1, R^2 and n have the same meanings as defined above.

Definition of alkoxycarbonyl:

The alkoxy group includes, for example, methoxy, ethoxy, propoxy, isopropoxy, butoxy, isobutoxy, t-butoxy, pentyloxy, hexyloxy, and other alkoxy groups each having about 1 to 10 carbon atoms. Among them, alkoxy groups having about 1 to 6 carbon atoms, in particular lower alkoxy groups having about 1 to 4 carbon atoms are preferable. Examples of the alkoxycarbonyl group include methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, pentyloxycarbonyl, hexyloxycarbonyl, and other alkoxycarbonyl groups each having about 1 to 10 carbon atoms in the alkoxy moiety.

Claims 7-9:

7. A catalyst composition according to claim 1, which comprises said imide compound shown by the formula (1), said strong acid and a co-catalyst.

8. A catalyst composition according to claim 7, wherein said co-catalyst is a compound containing at least one element selected from the group consisting of Group 2A elements of the Periodic Table of Elements, transition metal elements and Group 3B elements of the Periodic Table of Elements.

9. A catalyst composition according to claim 7, wherein said co-catalyst is a compound containing at least one element selected from the group consisting of Group 3A elements, Group 4A elements, Group 5A elements, Group 6A elements, Group 7A elements, Group 8 elements, Group 1B elements and Group 2B elements of the Periodic Table of Elements.

Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)

The difference between the prior art teachings and the instant claims is that the prior art specifically exemplifies catalysts with a cyclic imide having the alkoxycarbonyl of 1 carbon, but does not *specifically exemplify* catalysts, optionally with metal co-catalysts, wherein the cyclic imide is substituted with alkoxycarbonyl of more than 5 carbon atoms (C(O)ORx, where Rx is > 5 carbons).

Finding of prima facie obviousness---rationale and motivation (MPEP §2142-2413)

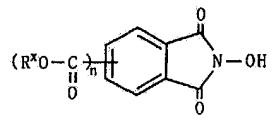
However, it would have been prima facie obvious for one of ordinary skill in the art at the time of the filing of the instant application to make additional catalysts structurally similar to those disclosed in Gogry, et al and/or prepare catalysts having an optional metal co-catalyst, such as those disclosed in Ishii, et al, wherein the cyclic imide is substituted by an alkoxycarbonyl of 5 or more carbon atoms, because Ishii, et al, specifically suggests that the alkoxycarbonyl groups have between 1-10 carbon atoms, which include moieties of 5 or more carbon atoms such as pentyloxycarbonyl and hexyloxycarbonyl and that such a modification would be expected to result in additional catalysts that are useful in oxidizing substrates with molecular oxygen.

C. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gorgy, et in view of Ishii, et al as applied to claim 3, AND over Ishii, et al as applied to claims 3 and 4. Applicants claims relate to catalysts comprising a cyclic imide compound of formula II as seen in claim 3 optionally further comprising a metallic compound (claim 4).

See re-presented claim 3 and 4 below:

Claim 3:

3. A catalyst comprising a cyclic imide compound represented by following Formula (II):



(II)

wherein R^x is a hydrocarbon group having five or more carbon atoms; and n denotes an integer of from 1 to 4, where the groups $-C(=O)-OR^x$ may be the same or different when n is equal to or more than 2.

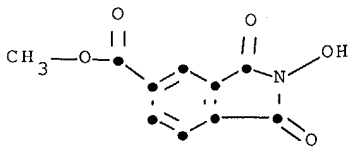
Claim 4:

4. The catalyst according to any one of claims 1 to 3, further comprising a metallic compound.

Determination of the scope and content of the prior art (MPEP §2141.01)

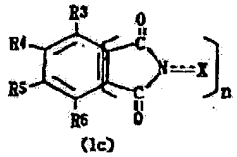
(a) Gorgy, et al (see attached 892, cited by Examiner) discloses a *specific* catalyst similar to those instantly claimed, where R4, which corresponds to Applicants Rx, is C(O)O-CH3, a.k.a., methoxycarbonyl and where n is 1. See compound 7, page 386. These catalysts are useful in oxidizing alcohols.

Specifically disclosed catalyst depicted below:



(b) Ishii, et al (JP 08-38909, cited by Applicants) discloses catalysts that are structurally similar to those instantly claimed which may be used to oxidize substrates with molecular oxygen. Specifically the reference discloses catalysts containing a cyclic imide, where the X is hydroxy, page 20 of translation, and the benzo of the cyclic imide is substituted by alkoxycarbonyl such as methoxy carbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, pentyloxycarbonyl and hexyloxycarbonyl. See page 19 of translation. Compound I(c) and definition of alkoxy carbonyl on page 17. The reference also discloses the metallic co-oxidant, see page 5, claim 8 of translation and page 5, claim 10 of translation.

See pertinent parts of disclosure re-presented below:



(Ic)

(Where R^3 to R^6 are the same or different and denote hydrogen atoms, alkyl groups, hydroxyl groups, alkoxy groups, carboxyl groups, alkoxycarbonyl groups, acyl groups, nitro groups, cyano groups, amine groups and halogen atoms. R^1, R^2 and n are the same as stated above.)

[Claim 8]

The oxidation catalyst of Claim 7 wherein the cooxidant is a transition metal compound or boron compound.

An alkoxylcarbonyl group with about 1 to 10 carbons in the alkoxy part, such as a methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, bentyloxycarbonyl and hexyloxycarbonyl group, is included as the alkoxycarbonyl group.

Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)

The difference between the prior art teachings and the instant claims is that the prior art specifically exemplifies catalysts with a cyclic imide having the alkoxycarbonyl of 1 carbon, but does not *specifically exemplify* catalysts optionally with a metallic co-catalyst, with a cyclic imide being substituted by an alkoxycarbonyl of more than 5 carbon atoms (C(O)ORx, where Rx is > 5 carbons).

Finding of prima facie obviousness---rationale and motivation (MPEP §2142-2413)

However, it would have been prima facie obvious for one of ordinary skill in the art at the time of the filing of the instant application to make additional catalysts structurally similar to those disclosed in Gogry, et al and/or prepare catalysts having an optional metal co-catalyst, such as those disclosed in Ishii, et al, wherein the cyclic imide is substituted by an alkoxycarbonyl of 5 or more carbon atoms, because Ishii, et al, specifically suggests that the alkoxycarbonyl groups have between 1-10 carbon atoms, which include moieties of 5 or more carbon atoms such as pentyloxycarbonyl and hexyloxycarbonyl and that such a modification would be expected to result in additional catalysts that are useful in oxidizing substrates with molecular oxygen.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686

F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 3 and 4 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4 and 7-9 of U.S. Patent No. 6,232,258 B1 (Ishii, et al).

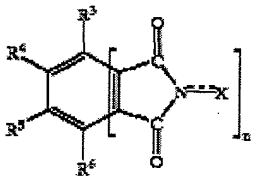
Ishii, et al claims catalysts that are structurally similar to those instantly claimed which may have optional metallic co-catalysts be used to oxidize substrates with molecular oxygen. Specifically the reference claims catalysts containing a cyclic imide, (Ic)

in claim 4, where the X is an oxygen or hydroxy, and the substitutents- on the benzo of the cyclic imide is substituted by alkoxycarbonyl, also in claim 4, the enabling disclosure provides that the alkoxycarbonyl is of 1-10 carbons, such as methoxy carbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, pentyloxycarbonyl and hexyloxycarbonyl. See page col. 3, lines 31-47 of reference. The reference also claims the optional metal co-catalyst in claims 7-9.

See claims and disclosure re-presented below:

Claim 4:

(Ic)



wherein R^3, R^4, R^5 and R^6 are the same or different a hydrogen atom, an alkyl group, a hydroxyl group, an alkoxy group, a carboxyl group, an alkoxycarbonyl group, an acyl group, a nitro group, a cyano group, an amino group or a halogen atom; and R^1, R^2 and n have the same meanings as defined above.

Definition of alkoxycarbonyl:

The alkoxy group includes, for example, methoxy, ethoxy, propoxy, isopropoxy, butoxy, isobutoxy, t-butoxy, pentyloxy, hexyloxy, and other alkoxy groups each having about 1 to 10 carbon atoms. Among them, alkoxy groups having about 1 to 6 carbon atoms, in particular lower alkoxy groups having about 1 to 4 carbon atoms are preferable. Examples of the alkoxycarbonyl group include methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, isobutoxycarbonyl, t-butoxycarbonyl, pentyloxycarbonyl, hexyloxycarbonyl, and other alkoxycarbonyl groups each having about 1 to 10

Claims 7-9:

7. A catalyst composition according to claim 1, which comprises said imide compound shown by the formula (1), said strong acid and a co-catalyst.

8. A catalyst composition according to claim 7, wherein said co-catalyst is a compound containing at least one element selected from the group consisting of Group 2A elements of the Periodic Table of Elements, transition metal elements and Group 3B elements of the Periodic Table of Elements.

9. A catalyst composition according to claim 7, wherein said co-catalyst is a compound containing at least one element selected from the group consisting of Group 3A elements, Group 4A elements, Group 5A elements, Group 6A elements, Group 7A elements, Group 8 elements, Group 1B elements and Group 2B elements of the Periodic Table of Elements.

The instant claims are drawn to a narrower scope than that specifically claimed in the Ishii patent. However, the narrower scope is claimed and defined by the enabling disclosure such that one of ordinary skill in the art would be motivated to make additional catalysts structurally similar to those disclosed in Ishii, et al and/or prepare catalysts having an optional metal co-catalyst wherein the cyclic imide is substituted by an alkoxycarbonyl of 5 or more carbon atoms, because Ishii, et al, specifically suggests that the alkoxycarbonyl groups have between 1-10

carbon atoms, which include moieties of 5 or more carbon atoms such as pentyloxycarbonyl and hexyloxycarbonyl and that such a modification would be expected to result in additional catalysts that are useful in oxidizing substrates with molecular oxygen.

IV. Objections:

Claims 1-2, 4 in part, not drawn to the elected group identified supra, and 5-9 are objected to as being drawn to non-elected subject matter.

V. Status of the Claims:

(a) Claims 3 and 4 in part are examined and stand rejected.

(b) Claims 1-2, 4 in part and 5-9 are withdrawn from consideration as being drawn to non-elected inventions and are objected to.

VI. Contact Information:

Any inquiry concerning this communication or earlier communications from the examiner should be directed to
Andrea D. Small whose telephone number is (703) 305-0811.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-1235.

A facsimile center has been established. The hours of operation are Monday through Friday, 8:30-6:30 PM. The number for accessing the facsimile machine is (703) 746-4984.

Andrea D. Small, Esq.
Patent Examiner
Art Unit 1626, Group 1620
Technology Center 1600

August 22, 2003